

CLAIM AMENDMENTS

Please amend the claims to be as follows:

Claims 1-14 (canceled)

15. (currently amended) The method of claim 14, A method for examining a specimen with a high aspect ratio feature, the method comprising:
impinging a primary beam onto an area of the specimen with the high aspect ratio feature;
impinging an auxiliary beam to control the charging of the specimen;
extracting scattered electrons that are generated due to the impingement of the primary beam onto the specimen;
applying a filter to remove the scattered electrons with characteristics outside of a selected filter range; and
detecting the scattered electrons with characteristics inside of the selected filter range to generate image data relating to the high aspect ratio feature,
wherein the auxiliary beam comprises a photon beam, and wherein electrons are emitted from the specimen due to photoemission.

Claims 16-28 (cancelled)

29. (original) A method for energy-filtered electron beam inspection, the method comprising:
capturing first image data set including electrons with energies above a first threshold energy level;
capturing second image data set including electrons with energies above a second threshold energy level; and

generating band-pass energy filtered image data by subtracting one said image data set from the other said image data set.

30. (original) The method of claim 29, wherein capturing the first and second image data sets are performed during alternate scanned image frames.

31. (original) The method of claim 30, wherein the threshold energy levels are applied using a conductive energy filter mesh modulated with alternating voltages.

32. (original) The method of claim 31, wherein transition between the alternating voltages is performed at a frame capture frequency.

33. (original) The method of claim 29, wherein at least one of the image data sets is normalized prior to the subtracting.

34. (original) An apparatus for energy-filtered electron beam inspection, the apparatus comprising:

a voltage generating system configured to generate a first voltage level and a second voltage level and to output in an alternating fashion the first and second voltage levels at a frame capture frequency;

an electron detector configured to detect a first image data set of electrons with energies above a first threshold energy level in response to the first voltage level and to detect a second image data set of electrons above a second threshold energy level in response to the second voltage level;

a first memory buffer region configured to store the first image data set;

a second memory buffer region configured to store the second image data set; and

a band-pass image generator configured to generate a band-pass image data set by subtraction of the second image data set from the first image data set.

35. (original) The apparatus of claim 34, wherein the voltage generating system comprises:

a first power supply for providing the first voltage level;
a second power supply for providing the second voltage level;
a relay switch for selecting between the first voltage level and the second voltage level and for outputting said selection; and
a scan generator for providing a trigger signal to the relay switch,
wherein the trigger signal causes the relay switch to alternate said selection between the first and second voltage levels at the frame capture frequency.

36. (original) The apparatus of claim 34, wherein the voltage generating system comprises:

a scan generator for providing a trigger signal;
a converter for converting the trigger signal to an analog control signal; and
a variable power supply to output the first voltage level when the analog control signal is at a first level and to output the second voltage level when the analog control signal is at a second level,
wherein the trigger signal causes the variable power supply to alternate the output between the first and second voltage levels at the frame capture frequency.

37. (original) The apparatus of claim 34, wherein the electron detector comprises:

an energy filter mesh to which the first and second voltage levels are applied;
and
a detector area to detect the electrons with energies above the first threshold energy level when the first voltage level is applied to the energy filter mesh and to detect the electrons with energies above the second threshold energy level when the second voltage level is applied to the energy filter mesh.